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CCCLXVI

MATVEYEV, Valentin Stepanovich

["The secret element" in psychics and science] "Tainstvennoe"
v psikhike i nauke.   Sverdlovsk, Sverdlovskoe knizhnoe izd-vo,
1958.   109 p.   (MIRA 13:2)
(Psychology, Physiological)

MATVEYEV, V.S.; SUDAKOV, N.I.

Conference of the Ural Department of the Psychological Association.
Vop.psikhol. 9 no.2:187-189 Mr-Ap '63.
(Perception—Congresses)   (MIRA 16:4)

S/762/61/000/000/029/029

AUTHORS: Morozov, Ye.I., Ronzhin, A.S., Prostov, I.A., Matveyev, V.S., Gurevich, S.M., Didkovskiy, V.P., Yasinskiy, K.K., Usov, V.N.

TITLE: Electroslag smelting of titanium ingots.

SOURCE: Titan v promyshlennosti; sbornik statey. Ed. by S.G.Glazunov. Moscow, 1961, 314-326.

TEXT: The paper describes a method of electrosclag smelting of Ti ingots with desirable mechanical properties and with a surface that requires almost no machining prior to plastic working. The principal objective of the development is the smelting of flat ingots for the rolling of sheet material with uniform transverse distribution of rolling deformation (cylindrical ingots are deformed more greatly at the center; tensile stresses produce edge cracking on the resulting sheets). Several organizations collaborated with the Institute of Electric Welding imeni Ye.O.Paton in 1959 in adapting the splashless electroslag method of Ti smelting (3 electrodes) developed in 1958 to the smelting of slab ingots of up to 200x800x700 mm and 500 kg. Good mechanical properties and high electric-power utilization result from the improved current- and heat-flow uniformity of the arc established underneath the protective flux layer. Since 3, as well as one, electrodes can be employed, the 3 phases of an a.c. power supply can be utilized uniformly. The fused flux layer contributes to the formation of a singularly compact ingot structure. Flux must: (1) Not contain O; (2) have a m.p. close to that of the metal and be readily fusible; (3) have a high b.p.
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Electroslag smelting of titanium ingots.

S/762/61/000/000/029/029

(not less than 2,000°C). Neutral-gas shielding above the flux is mandatory to avoid O reaction. Details of the experiments with various fluxes, which led to the adoption of CaF_2 (brand " " (Ch)) and a purifying remelt of the flux in an induction furnace prior to use, are reported and tabulated. Comparison of BT (VT) -1, -3-1, and -5, OT4, and Ti-8Mn ingots obtained by the electroslag (ES) and vacuum arc (VA) methods. Differences between ES and VA ingots initially observed were found to be attributable to the use of pressed electrodes in the ES method; use of once-VA-melted ingots as starting electrodes in both ES and VA methods yielded BT (VT) and OT ingots of practically identical mechanical properties (described and tabulated). The mechanical properties of the Ti-8Mn were considerably improved by the ES method; this is attributed to the more uniform distribution of the high-vapor-pressure Mn in the ingot under the protection of the flux. The BT (VT) and OT alloys showed either increased strength or impaired notch toughness when smelted under a fluorspar flux, probably as a result of uncontrollable admixtures contained in the fluorspar. Furnace: The design of the 3-electrode furnace, with a crystallizer, electrode chamber, flux dispenser, electrode-advance mechanism, protective shield, and power transformer, is described and illustrated (cross-section, photos); its operation and process control are described in detail. A 500-kg ingot shows the result of deliberate manual delays in electrode advance in the form of nonuniformities (photo). Design criteria were obtained for future furnace designs. There are 6 figures, 3 tables, and 2 Russian-language Soviet references identified in footnotes.

Card 2/2

ASSOCIATION: None given.

MATVEYEV, V. S.

S/844/62/000/000/095/129
D204/D307

AUTHORS: Dogadkin, B. A., Tarasova, Z. N., Kaplunov, M. Ya., Koslov, V. T., Klausen, I. A. and Matveyev, V. S.

TITLE: The interactions of sulfur with polymers under the action or irradiation

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 554-562

TEXT: The interactions of S with natural rubber, 1,4-cis-polybutadiene, butadiene-styrene and butyl rubber was studied, under irradiation from a Co^{60} source. S added on to natural rubber at 25 - $100^{\circ}C$ and to butadiene-styrene rubber and polyethylene at $25^{\circ}C$, under argon, in amounts increasing with the dose (0 - 120 Mr), the rate of addition being faster at higher temperatures. At room temperature the amount of S added on is independent of the initial S-content in the starting mixture (1 - 10% by weight). The addition

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The interactions of ...

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D204/D307

was promoted by C_2Cl_6. The presence of S hindered the development of structurization, which was, however, promoted by raising the temperature from -80 to 100°C. Pure natural rubber developed cross-linking only up to ~50°C, above which temperature the process was reversed; this reversal was not observed in the presence of 2% S, up to 100°C. The presence of 1 - 4% S in CKC-30AM (SKS-30AM) butadiene-styrene rubber led only to a slight reduction in the degree of cross-linking on irradiation. The loss of unsaturation and $-CH_2-$ groups on irradiation was studied (by ir spectroscopy) on natural rubber both in the presence and absence of S, and was found to be greater in the latter case. The S adds on in a form capable of isotopic exchange with elemental sulfur. Initially 70% of the added sulfur may be exchanged in natural and butadiene-styrene rubbers; this value falls with irradiation to a constant 40% at 50 - 120 Mr. Radiational vulcanisates of natural rubber exhibit increased tensile strength when the polymer contains 2% S, particularly at 100°C; in general, the strength increases with the dose of irradiation. The best strengths were obtained for a mixture of

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The interactions of ...

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natural rubber, S, and C_2Cl_6. The sulfur is believed to interact with the polymeric radicals (formed on irradiation by C-C fission) to form polysulfides which (a) lower the thermomechanical stability, and (b) prevent recombination reactions and reactions of radicals formed with C=C, thus hindering the development of branched structures. There are 12 figures.

ASSOCIATION: NII shinnoy promyshlennosti (NII of the Tire Industry)

Card 3/3

MATVEYEV, V. S. (Editor in Chief)

Vnutriutrobnoe razvitie sovetskogo merinosa (Intrauterine development of the Soviet merinos) Collection of works. M., Izd-vo Akad. nauk SSSR, 1959, 340 pages with illustrations (Academy of Sciences of the USSR, Transactions of the Institute of Animal Morphology imeni A. N. Severtsov, v.23) Price 20 r. 50 k.; 1,400 copies.

MATVEYEV, V.S.

Pea-hydrolysate culture media for the production of some biopreparations. Trudy Gos.nauch.-kont.inst.vet.prep. 4:418-421 '53.

(MLRA 7:10)

1. Omskaya biofabrika.
    (Bacteriology--Cultures and culture media)

MATVEYEV, Vitaliy Sergeyevich, kand.tekhn.nauk; KRASTINS, V. [translator];
DIMZA, J., red.; KIHULE, L., tekhn.red.

[From balloon to the space rocket] No gaisa balona lidz
kosmiskajai raketei. Riga, Latvijas Valsts izdevnieciba, 1960.
117 p. Translated by V. Krastins.   (MIRA 14:12)
                (Aeronautics)

MATVEYEV, V.V.

Cutting precision threads with machine taps. Stan.i instr. 34 no.2:
25-27 F '63.   (MIRA 16:5)
        (Screw cutting)   (Taps and dies)

MATVEYEV, V.V.

Eliminating fractures of machine taps in cutting thread in deep holes. Stan. i instr. 34 no.9:28-31 S '63.   (MIRA 16:11)

AUTHOR: Matveyev, V.V.   136-11-6/17

TITLE: The New Yuzhuralmashzavod Charge Reclaiming Machine
          (Novaya shikhtopogruzochnaya mashina Yuzhralmashzavoda)

PERIODICAL: Tsvetnyye Metally, 1957, No.11, pp. 30 - 35 (USSR).

ABSTRACT: The author points out that although the use of charge-
      bedding is rapidly increasing in the USSR, existing designs of
      reclaiming machine (Debal'tsevskiy and Yuzhuralmashzavod Works)
      have many defects. These were discussed by I.V. Kurshakov in
      No.2 issue of this journal in 1956 and the present author
      expands on them and criticises some of the design of buildings
      mentioned in that article, particularly the use of open trenches.
      He suggests that with automation and remote control closed
      trenches are acceptable and gives details of a new machine
      designed by Yu.hurolmashzavod in 1956, in which many of the
      noted defects are eliminated. This machine is 10.68 m long
      and moves on rails at 2.7 m. above floor level and can reclaim
      the bed at a maximal speed of 1.04 m/hour (120 m^3/hour);
      maximal bed height is 10 m, cross-sectional area 120 m^2 and
      bridge-span 19.5 m. There are 4 figures.

ASSOCIATION: Yuzhuralmashzavod

AVAILABLE: Library of Congress

Card 1/1   1. Charges-Reclamation   2. Charge reclaiming machine-Design

VOL'NOV, I.I.; SOKOVNIN, Ye.I.; MATVEYEV, V.V.

Synthesis of alkali metal ozonides by the interaction of super-
oxides with ozonized oxygen. Izv.AN SSSR.Otd.khim.nauk no.6:
1127 '62.   (MIRA 15:8)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova
AN SSSR.
            (Ozonides) (Oxygen) (Superoxides)

ACCESSION NR: AP3002224

CaO sub 3 is unstable to moisture and CO sub 2. Differential thermal analysis showed that its decomposition into CaO sub 2 and oxygen starts at 700 and shows a maximum at 100C. CaO sub 2 melts at 400C and then decomposes into Ca sub 2 O and oxygen. Orig. art. has: 4 figures and 2 formulas.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry, Academy of Sciences SSSR)

SUBMITTED: 23Oct63   DATE ACQ: 16Jul63   ENCL: 00

SUB CODE: 00   NO REF SOV: 005   OTHER: 008

GOL'BEK, G.P.; MATVEIEV, V.V.; SHLYAPNIKOV, B.S.

[Physical method of determining the amounts of uranium, radium and thorium in radioactive ores] Fizicheskiy metod opredeleniia soderzhaniia urana, radiia i toriia v radioaktivnykh rudakh; doklady, predstavlennye SSSR na Mezhdunarodnuiu konferentsiiu po mirnomu ispol'zovaniiu atomnoi energii. Moskva, 1955. 18 p.   (MIRA 9:7)
(Uranium)   (Radium)   (Thorium)

MATVEYEV, V.V.

SUBJECT	USSR / PHYSICS CARD 1 / 2 PA - 1514
AUTHOR	MATVEEV,V.V., SOKOLOV,A.D., SLJAPNIKOV,P.S.
TITLE	The Energy Distribution of Gamma Quanta Originating from a Puncti- form Gamma Radiation Source in an Infinite Sandy Medium.
PERIODICAL	Atomnaja Energija, 1, fasc. 4, 57-62 (1956) Issued: 19.10.1956

The present article studies the energy spectra of γ-radiation at various dis- tances from punctiform sources $(Cr^{51}, Zn^{65}, Ra$ and $MsTh)$. Description of tests: Tests were carried out in sandy soil (density 1,6 g/cm^3). The recording device for γ-radiation was located in a depth of 110 m. At various distances from it tubes filled with the gamma radiation source were fitted in a horizontal line with the recording device. A special   s c i n t i l l a t i o n   g a m m a s p e c t r o m e t e r   was built for these tests. Gamma radiation was re- corded by means of a radiating head consisting of a CsJ(Tl)-crystal, a photo- multiplier "FEU-12" and an output cathode repeater. The impulses emitted from the cathode repeater were transmitted to a linear amplifier and from there to an analyzing counting system with 3 channels (channel of general counting, channel of differential counting, and channel of integral counting). G a m m a r a d i a t i o n   s o u r c e s   with different intensities were needed. Sources with Cr^{51} and Zn^{65} with a γ-intensity of from 0,1 to 10 millicurie were used. Furthermore, a set of Ra- and MsTh-sources with different intensi- ties was employed.

Atomnaja Energija, 1, fasc. 4, 57-62 (1956) CARD 2 / 2   PA - 1514

Test results and their discussion: The energy distribution of the γ-quanta
was carried out at distances of 5, 35, 45, 60 and 80 cm (corresponding to the
values μR = 0,83; 7,49; 10.0; 11,7; 13,3) from the Cr^{51} source, and of
35, 70, 100 and 130 cm (corresponding to μR = 3,4; 6,8; 9,6 and 12,5) from
the Zn^{65}-source. At $\mu R > 5$ the spectra of Cr^{51} and Zn^{65} are of the same charac-
ter. At relatively short distances ($\mu R > 5$) primary radiation plays an im-
portant part, although secondary scattered radiation already amounts to a
large part of the total radiation. The significance of some peaks is discussed.
On the occasion of the passage of γ-rays through layers of sand the soft
scattering of radiation with an energy of $\sim$ 50 keV is accumulated (indepen-
dent of the energy of the primary γ-quanta) in the energy distribution of
the γ-radiation. For the purpose of clearing up the character of the gamma
spectra in media with large Z similar measurements were undertaken with a
radiation of 323 keV and 1114 keV in lead. Furthermore, the energy distribution
of the γ-radiation of punctiform Ra- and MsTh-sources was studied. Also these
spectra behave in a manner similar to that of the above discussed spectra.

INSTITUTION:

MATVEYEV V V

89-9-9/32

AUTHOR: GOL'BEK, G.R., MATVEYEV, V.V., SHLYAPNIKOV, R.S.
TITLE: A Portable Radiometer Analyzer. (Polevoy radiometr-analizator)

PERIODICAL: Atomnaya Energiya, 1957, Vol 3, Nr 9, pp 247-250 (U.S.S.R.)

ABSTRACT: The electronic wiring circuit and the mechanical structure of a newly constructed portable (2,5 kg) radiometer analyzer is described, by means of which it is possible to describe the radium (Man)-thorium content (> 0,01%) of a rock.
Two measurements are possible:
1.) Recording of γ-radiation and determination of its intensity,
2.) Analysis of the spectral composition of γ-radiation, from which it is possible to draw conclusions as to the nature of the rock investigated.
By means of the device described it is possible to determine γ-intensities of from 3 to 15 000 mC/h and to carry out the spectral analysis of the γ-spectrum if γ-intensity is within the range of from 50 to 5000 mC/h. (With 1 Table, 2 Illustrations, and 2 Slavic References).

ASSOCIATION: Not given
PRESENTED BY:
SUBMITTED: 19.12. 956
AVAILABLE: Library of Congress
Card 1/1

MATVEYEV, Viktor Vasil'yevich, kand.fiziko-matemat.nauk; POPOV, A.S.,
red.; SHAIKINA, N.D., tekhn.red.

[Invisible assistants] Nevidimye pomoshchniki. Moskva, Izd-vo
VTsSPS Profizdat, 1959. 124 p.   (MIRA 12:11)
(Radioisotopes)

MATVEYEV, V.V.

21.5300

AUTHORS: Matveyev, V.V., Popkov, G. K. and Sokolov, A. D.

66365

SOV/120-59-5-8/46

TITLE: Determination of Some Photomultiplier and Scintillator Parameters

PERIODICAL: Pribory i tekhnika eksperimenta, 1959, Nr 5, pp 40-44 (USSR)

ABSTRACT: An apparatus is described for the rapid determination of some photomultiplier parameters and the selection of the most suitable supplies. The experimental counter head is shown schematically in Fig 2, in which 4 is the photomultiplier, 2 is the radioactive source, 1 is a cap for work with liquid scintillators and 6 is a demountable voltage divider. The cap includes a micrometer arrangement so that the distance from the source to the photo-cathode may be varied between 0 and 150 mm with an accuracy of 0.25 mm. The output of the photomultiplier is fed to a conventional kicksorter arrangement. A study was made of the effect of the source position, type of radiation, the supplies and the voltage distribution among the dynodes. The optimum results were obtained with solutions similar to those used by Brooks (Ref 10),

Card1/2

Determination of Some Photomultiplier and Scintillator Parameters

66365

SOV/120-59-5-8/46

Reines et al. (Ref 12) and Bannerman et al. (Ref 13). Only Soviet multipliers were investigated. Acknowledgments were made to K. S. Mikhaylov and V. R. Lazarenko for their valuable advice. There are 3 figures, 2 tables and 15 references, 5 of which are Soviet, 1 Hungarian, 1 French and 8 English.

SUBMITTED: August 31, 1958

Card 2/2

SOV/89-6-4-15/27

21(4), 21(8)
AUTHORS: Gol'bek, G. R.,   Matveyev, V. V.,   Sokolov, A. D.

TITLE: A Gamma Field in Air Formed by a Punctiform γ-Ray Source
Which Is Embedded in a Semi-infinite Sandy Material (Gamma-
pole, obrazovannoye v vozdukhe tochechnym istochnikom γ-iz-
lucheniya, pomeshchennym v polubeskonechnuyu peschanuyu sredu)

PERIODICAL: Atomnaya energiya, 1959, Vol 6, Nr 4, pp 475-478 (USSR)

ABSTRACT: Experimental arrangement: The γ-measuring head is located
8.5 m above the ground. It consists of a   NaJ(Tl)-crystal
(diameter 40 mm, height 10 mm) and the multiplier FEU-12 and
is connected with a cathode follower and a pulse analyzer.
(The γ-spectrometer was developed by   N. I. Aleshin, A. A.
Markov and V. N. Markov). The spectrometer was gauged by means
of the known γ-standard line and shows a deviation of only
4% from its linearity within the range of 48 kev to 2.62 Mev.
The resolving power is 10.8% (half-width of the photopeak
of Cs^{137}). As a γ-radiating source $Zn^{65}-$, Ra- and MsTh-pre-
parations of 0.1 C thickness were used, which were embedded
in loose sand in depths of 5, 10, 20, 30 and 40 cm. The dif-
ferential- as well as the integral spectra were measured.
In order to be able to compare them with one another, the

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SOV/89-6-4-15/27

A Gamma Field in Air Formed by a Punctiform γ-Ray Source Which Is Embedded
in a Semi-infinite Sandy Material

former were standardized with respect to surface, and the
latter as to 60 kev. The results obtained show that the
low-energy part of γ-distribution is practically the same
for all sources and depends only little on the depth in
which the source is embedded. In the case of sources being
embedded up to 10 cm the ends of the spectra are distinctly
marked, and the photopeaks of the individual γ-lines of the
various sources are visible. If the sources are deeply embed-
ded, a change occurs in the hard part of the spectrum, but
the individual character of the spectra nevertheless is con-
served. The intensity variation of γ-radiation in dependence
on the depth in which the source is embedded (5 - 50 cm,
recorded every 5 cm) was also measured and is shown in form
of a graph. The results obtained were discussed with I. I.
Gurevich. I. P. Lavrushkin took part in the experiments. There
are 4 figures and 4 references, 3 of which are Soviet.

SUBMITTED: August 26, 1958

Card 2/2

KUROCHKIN, S.S., kand. tekhn. nauk, red.; MATVEYEV, V.V., kand. fiz.-mat. nauk, red.; ZHERNOV, V.S., red.; KUZNETSOV, K.F., red.; LAZAREV, A.F., red.; MAMIKONYAN, S.V., glav. red.; MEMIROVSKIY, B.V., red.; POLIKARPOV, V.I., red.; KHAZANOV, B.I., red.; ERGLIS, K.E., zam. glav. red.; SHIRSHOV, D.P., red.; ANDREYENKO, Z.D., red.; VLASOVA, N.A., tekhn. red.

[Apparatus for nuclear spectrometry; collection of scientific and technical articles] Apparatura dlia iadernoi spektrometrii; nauchno-tekhnicheskii sbornik. Moskva, Gos. izd-vo lit-ry v oblasti atomnoi nauki i tekhniki. No.1. 1960. 131 p.   (MIRA 14:7)
        (Spectrometry)   (Nuclear research)

MATVEYEV, V.V.; SOKOLOV, A.D.

Application of scintillation counters in standard apparatus.
App.dlia ind. spek. no.1:7-18 '60.   (MIRA 14:8)
                (Scintillation counters)

MATVEYEV, V.V.; SOKOLOV, A.D.

Characteristic amplitude resolving power of a photomultiplier.
App.dlia iad., spek. no.1:19-27 '60.   (MIRA 14:8)
              (Photoelectric multipliers)

MATVEYEV, V.V.; SOKOLOV, A.D.; SUCHKOVA, L.A.

Some problems of the construction of light pipes for scin-
tillation counters. App.dlia izd. spek. no.1:28-40 '60.
(MIRA 14:8)
(Scintillation counters)

GRUMBKOV, A.P.; MATVEYEV, V.V.; SEMENOV, G.S.; SOKOLOV, A.D.

Using scintillation instruments in oil and gas prospecting.
Geol. nefti i gaza 4 no. 3:33-37 Mr '60.   (MIRA 13:12)

1. Institut geologii i razrabotki goryuchikh iskopayemykh
AN SSSR.
                    (Scintillation counters)

85349
S/120/60/000/005/019/051
E032/E514

9.4130 (2301, 2861, 3000/)

AUTHORS: Matveyev, V.V., Minayeva, Ye. Ye. and Sokolov, A.D.

TITLE: Measurement of the Anode Current of Photomultipliers

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, No.5, pp.86-89

TEXT: The anode currents of Soviet photomultipliers
(types ФЭУ-29 (FEU-29), 24, 13, C (S), 23) were investigated as
functions of the magnetic field. It was found that the properties
of these photomultipliers as far as the effect of the magnetic
field is concerned are identical with the RCA 5819 and RCA 6199
photomultipliers. The limiting magnetic field lies in the neigh-
bourhood of 0.5 Oe.   There are 4 figures and 8 references:
4 Soviet and 4 English.

SUBMITTED: August 26, 1959

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11.6000,21.5200

77226
SOV/89-8-1-20/29

AUTHORS: Matveyev, V. V., Sokolov, A. D.

TITLE: •   A Radiometer-Analyzer for an Aircraft. Letter to the
             Editor

PERIODICAL: Atomnaya energiya, 1960, Vol 8, Nr 1, pp 70-72 (USSR)

ABSTRACT: Radiometric prospecting for radioactive ore sites using
             airplanes was, according to the authors, practically
             nonexistent due to lack of appropriate equipment. They
             developed, therefore, a highly sensitive liquid scintil-
             lator threshold γ-spectrometer. The counting head,
             represented in Fig. 2, consists of an aluminum cylinder
             20 cm in diameter and 60 cm high and two photoelectric
             multipliers type FEU-19M and FEU-24. Solution of p-
             terphenyl in toluol was chosen for the scintillator and
             4 gm/liter of p-terphenyl was found to constitute the
             optimum concentration. Additional 20 mgm/l of
             naphthylphenyloxazole (α NPO) increased the sensitivity
             for approximately 10%, and by removing any possible
Card 1/5   poisoning by oxygen (passing pure argon through the

A Radiometer-Analyzer for an Aircraft.   77226
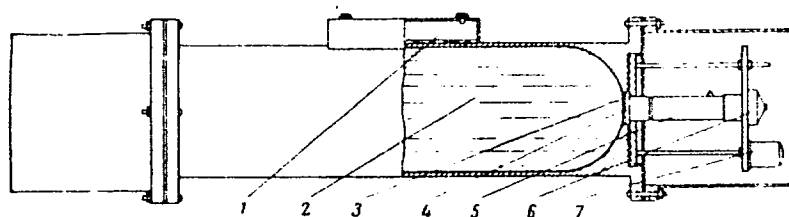Letter to the Editor   SOV/89-8-1-20/29

Fig. 2. Diagrammatic cross section of the counting head:
(1) auxiliary container; (2) liquid scintillator; (3)
gasket; (4) window; (5) FEU; (6) high voltage point;
(7) cathode follower.

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A Radiometer-Analyzer for an Aircraft.   77226
Letter to the Editor   SOV/89-8-1-20/29

scintillator) the sensitivity registered 10% more gain.
The auxiliary container held some additional argon to
prevent possible future poisoning. Power was supplied
by a high-voltage sectionalized battery, which
unfortunately did not permit an adjustment of voltages
for the optimum performance of the photomultipliers.
The schematics of the electronic part is shown in Fig.
1. One can switch from a general counting channel with
a threshold varying between 50 and 500 kev to a cutoff
counting channel with a threshold varying between 1.5
and 2.5 mev. High-energy (above 3 me.) cosmic ray
counts are eliminated using anticoincidences. The
sensiti ity of the FEU-19M per channel of the general
count was 500 ± 50 counts/sec for 1 μ Roentgen/h of
radium radiation. The coefficients of relative
rigidity of γ-rays (in percent of the count on the
general channel) are 4 thorium and 2 for the radium
radiations. The tests in the year 1956 and use in 1957
showed that the high sensitivity and the possibility
of threshold γ-ray spectrometry open large methodologi-
Card 3/5   cal possibilities for aeroradiometric prospecting.

A Radiometer-Analyzer for an Aircraft.   77226
Letter to the Editor   SOV/89-8-1-20/29
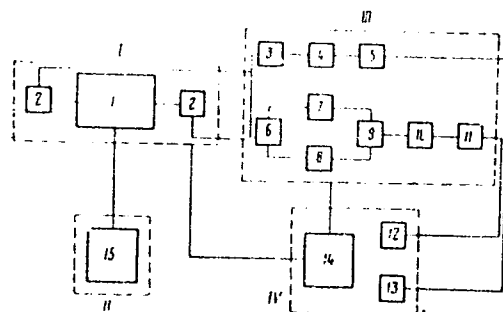
Fig. 1. Block diagram of the apparatus: [I] counting
head (1) scintillation counter; (2) cathode repeaters);
[II] high-voltage power supply FEU; [III] electronic
scheme (3,6) cathode repeaters; (4,7,8) amplitude dis-
criminators; (5,11) counting rate meters; (9) anticoin-
cidence scheme; (10) pulse-forming single flip-flop
oscillator); [IV] automatic device for data and power
supply (12,13) registering galvanometers; (14) trans-
formers and rectifiers; (15) high-voltage battery).

Card 4/5

A Radiometer-Analyzer for an Aircraft.   77226
Letter to the Editor   SOV/89-8-1-20/29

    There are 3 figures; and 9 references, 4 Soviet, 1
    German, 4 U.S. The U.S. references are: F. Broons,
    Progr. Nucl. Phys., 5, 252 (1956); F. Hayes, et al.,
    Nucleonics, 14, Nr 1, 42 (1956); P. Swank, Annual Rev.
    Nucl. Sci., 4, 11 (1954); R. Pringl, et al., Phys.
    Rev., 92, 1582 (1953).

SUBMITTED: December 23, 1958

Card 5/5

84723

S/057/60/030/010/002/019
B013/B063

26.2246

AUTHORS: Matveyev, V. V., Sokolov, A. D.

TITLE: Examination of Hard X-Rays From the Toroidal System
             "Токамак -2" (Tokamak-2)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1960, Vol. 30, No. 10,
             pp. 1145-1151

TEXT: A system serving for recording and determining the energy and time
distribution of pulsed X-radiation is described. In addition, results are
given regarding the study of rules governing X-radiation yield from the
toroidal pulsed chamber "Tokamak-2". The system consisting of two main
parts (see block diagram in Fig. 1) allows recording pulses by means of a
scaler, and determining their distribution within time intervals of from
10 to 2000 msec. In addition, oscillograms may be recorded for determining
the distribution of pulses in time and in amplitude. Experiments have
shown the possibility of reliably recording radiation with a $1 \cdot 10^{-6}$ sec
time resolution. The screening provided ensures the normal performance
under operational conditions and reduces the amplitude of the natural

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84723

Examination of Hard X-Rays From the Toroidal   S/057/60/030/010/002/019
System "TOKAMAK-2" (Tokamak-2)   B013/B063

background to low values ($\sim$1 pulse during 8 discharges). "Tokamak-2"
served for studying the dependence of the yield of hard X-rays with
energies exceeding 50 kev on the initial deuterium pressure and on the
electric field strength. As follows from the dependences thus found (Fig.2)
X-rays are only then observable, when the ratio of electric field strength
versus the initial pressure ranges between 100 and 300 v/cm.mm Hg and the
peak of yield is between 160 and 170 v/cm.mm Hg. "Tokamak-2" was also
employed to study the effect of the potential of a longitudinal magnetic
field on X-radiation intensity. The functions found are shown in Fig. 3.
As may be seen, the dependence of radiation yield has the same character
in each of the cases examined. The yield attains its peak at a magnetic
field strength of 5 - 6 kilogauss. Investigations were also extended
to the time and energy distribution of X-rays (Fig. 4). Oscillograms
revealed that X-rays are only emitted during a steady increase of the
discharge current. Mainly X-ray quanta with energies of 600 to 9000 kev
were found to be emitted, although numerous spectra exhibit quanta with
energies up to 2——2.2 Mev. The energy maximum of X-ray quanta recorded
under various operational conditions is both dependent on the ratio E/P
and on the longitudinal magnetic field strength. The peak values of the

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Examination of Hard X-Rays From the Toroidal   84723
System "TOKAMAK-2"(Tokamak-2)   S/057/60/030/010/002/019
                                       B013/B063

maximum quantum energy are observable at E/P in the range of
160-170 v/cm.mm Hg and at a maximum potential of the longitudinal
magnetic field. By comparison of Fig. 3 with Fig. 5 it was found that the
established functions are little changed by energy losses caused by
X-radiation. This is due to the fact that the X-ray yield is far more
dependent on operational conditions of the chamber than on changes in the
energy spectrum. A study made of the dependence of the maximum X-ray
quantum energy on its emission time did not allow drawing any definite
conclusions about the correlation existing between these quantities.
Conclusions gained from an interpretation of results call for a further
investigation of hard X-radiation. The authors thank N. A. Yavlinskiy,
V. S. Mukhovatov, and V. S. Strelkov for their valuable advice, and
V. Z. Sedin for his assistance. The experimental system was worked out by
a group of designers under the supervision of A. M. Radyvanyuk. There are
5 figures and 5 references: 4 Soviet.

SUBMITTED: April 9, 1960

Card 3/3

MATVEYEV, V. V. and BALDIN, S. A.

"Gaseous Scintillation Counter for Neutron Fluxes Spectrometry Filled with HE-3.

report submitted for the IAEA conf. on Nuclear Electronics, Belgrade, Yugoslavia 15-20 May 1961

S/578/61/000/002/001/002
E032/E514

AUTHORS: Matveyev, V.V. and Sokolov, A.D.

TITLE: An apparatus for the investigation of hard X-rays
produced in high-power, pulsed gas discharges

PERIODICAL: Zhernov, V.S. and Shirshov, D.P., eds. Uzly novoy
apparatury dlya issledovaniya yadernykh izlucheniy;
nauchno-tekhnicheskiy sbornik. no.2. Moscow,
Gosatomizdat, 1961, pp.101-106

TEXT: A block diagram of the apparatus is shown in Fig.1.
It is designed for the determination of the energy and time
distribution of hard X-rays emitted from high-power gas discharges
of the type produced in laboratory experiments on controlled thermo-
nuclear reactions.   The X-rays are detected by a scintillation
counter (NaI; diameter 80 mm, height 80 mm).   The phosphor is
mounted on a ФЭУ-24 (FEU-24) photomultiplier, which has an
intrinsic amplitude resolution of about 6%.   The pulse from the
photomultiplier is transmitted by a 50 m cable, the matching being
achieved by a cathode follower.   The pulses are amplified by the
amplifier УИС-2 , which has been described by the present
           (UIS-2)
Card 1/3

An apparatus for the ...

S/578/61/000/002/001/002
E032/E514

authors (Ref.2: Apparatus for nuclear spectrometry, M., Atomizdat 1960, No.1, p.19). The delayed pulse generator ГИС-2 (GIS-2) can be used to produce time "windows" between 10 μsec and 2 msec with a delay up to 10 msec. The pulses are recorded from the screen of a double-beam pulse oscillograph OK-24M. The device has been used to study X-ray pulses produced during the operation of the pulsed toroidal chamber "Tokamak-2". Acknowledgments are expressed to A. M. Radyvanyuk who was in charge of the construction of the apparatus. There are 4 figures and 4 Soviet references.

Fig.1. Legend.
I - block diagram of counter, II - block diagram of control desk and recording unit; 1 - phosphor, 2 - photomultiplier; 3 - cathode follower; 4 - double-beam pulse oscillograph OK-24M, 5 - photographic camera; 6 - UIS amplifier; 7 - gate; 8 - ПС-10000 (PS-10 000); 9 - pulse generator GIS-2; 10 - photomultiplier supplies; 11 - cathode follower supplies.
[Abstractor's Note: PS -10 000 is believed to be a pen recorder.]

Card 2/3

20687

9.4130 (1138, 1141, 2801, 3201)   S/120/61/000/001/023/062
                                    E032/E114

AUTHORS: Matveyev, V.V., and Sokolov, A.D.

TITLE: Determination of the Natural Amplitude Resolution of
         Photomultipliers Using a Pulsed Source of Light

PERIODICAL: Pribory i tekhnika eksperimenta, 1961, No.1, pp.75-77

TEXT: In order to determine the natural amplitude
resolution of photomultipliers it is necessary for the source of
light to produce constant amplitude flashes. The source used by
the present authors is similar to that employed by G.F.J.Garlick
and G.T. Wright (Ref.18), except that in order to improve the
stability, the amount of feedback was increased and the MH-8
(MN-8) tube was replaced by the cold cathode thyratron TX-4B
(TKh-4B) which has a non-activated molybdenum cathode.   As a
result, the instability in the amplitude of the light flashes over
an 8-hour period of continuous operation was found to be not more
than ± 2.5%, the half-width of the amplitude distribution being
not more than 1%.   The basic circuit is illustrated in Fig.1.
G.T. Wright (Ref.19) has shown that the output voltage of a
photomultiplier due to a scintillation flash with a time constant
Card 1/6

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S/120/61/000/001/023/062
E032/E114

Determination of the Natural Amplitude Resolution of
Photomultipliers Using a Pulsed Source of Light

τ at the photocathode can be represented by an expression of the
form

$$v(t) = \frac{N_0 eqM}{C(\tau/RC - 1)} \left[\exp(-t/\tau) - \exp(-t/RC)\right]$$

where M is the amplification coefficient of the photomultiplier,
e is the electronic charge, N_0 is the number of electrons and
q is the photoelectron collection coefficient at the first
dynode of the photomultiplier. In the determination of the
resolution of a photomultiplier, the length of the light pulse
τ_ρ is in general not equal to the time constant of the
scintillator τ, and hence it is necessary to find the conditions
under which the number of photoelectrons due to the light flash is
equal to the number of photoelectrons due to scintillation.
Neglecting differences between the form of the light flashes and
the scintillations, one can show that the above numbers of
photoelectrons are equal when $\tau/RC \ll 1$ and $\tau_\rho/RC \ll 1$.

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20687

Determination of the Natural Amplitude Resolution of
Photomultipliers Using a Pulsed Source of Light

In order to verify this result, the dependence of the resolution
of a photomultiplier and a scintillation counter on the magnitude
of RC was studied experimentally, using the above pulsed source
and a NaI (T1) crystal. The persentage resolution for the
photomultiplier (curve I) and the scintillation counter (curve II)
is shown in Fig.2 as a function of τ/RC. As can be seen from
Fig.2, curve I is in agreement with theoretical calculations
(J.F. Vervier, P.C. Mac, Ref.20) while curve II, which was
obtained with the pulsed source of light, shows a more rapid
increase in the resolution. This is apparently associated with
the difference between the form of the actual light-flash and that
assumed in the theoretical calculations of G.T. Wright (Ref.19).
It appears that for most practical purposes it is sufficient to
satisfy the condition $\tau/RC \lesssim 0.1$. In a further experiment,
the natural resolution of ΦЭУ -1ᶜ (FEU-1S) photomultipliers having
different integral photocathode sensitivities was investigated.

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20687

S/120/61/000/001/023/062
E032/E114

Determination of the Natural Amplitude Resolution of Photomultipliers Using a Pulsed Source of Light

Use was made of a light source with intensity equal to that of scintillations in a sodium iodide crystal irradiated with Cs137 γ rays. The result is shown in Fig.4 in which the resolution of the photomultiplier (in percent) is plotted as a function of the integral photocathode sensitivity (μa/lumen).

Acknowledgements are expressed to I.S. Krasheninikov for valuable advice and to Ye.Ye. Minayeva and G.I. Shuvalov for assistance in the experiments.

There are 4 figures and 22 references: 9 Soviet and 13 non-Soviet.

SUBMITTED: December 31, 1959

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20687

S/120/61/000/001/023/062
E032/E114

Determination of the Natural Amplitude Resolution of
Photomultipliers Using a Pulsed Source of Light

Fig. 1
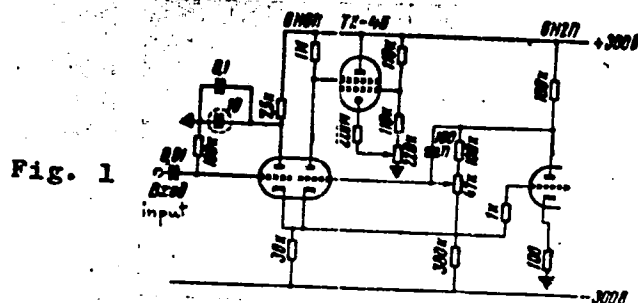
Card 5/6

20687

S/120/61/000/001/023/062
E032/E114

Determination of the Natural Amplitude Resolution of
Photomultipliers Using a Pulsed Source of Light
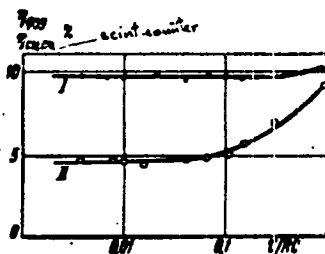
Fig. 2

Fig. 4

Card 6/6
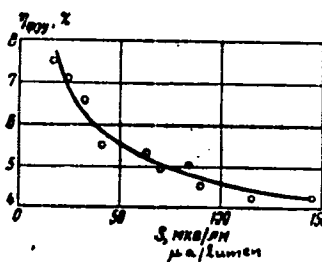
20703

S/120/61/000/001/041/062
E032/E114

26.2244

AUTHORS: Matveyev, V.V., and Sokolov, A.D.

TITLE: An Instrument for the Recording of Neutrons Produced
             in a Toroidal Pulsed Discharge

PERIODICAL: Pribory i tekhnika eksperimenta, 1961, No.1, pp 130-132

TEXT: One of the characteristics of a pulsed, high-current
discharge is the number and the time distribution of the neutrons
emitted during the discharge. The present authors describe an
instrument designed to determine the yield and the time distribu-
tion of neutrons produced in a toroidal thermonuclear apparatus.
The instrument is in the form of a scintillation counter working
in conjunction with an electronic circuit capable of recording and
analyzing the pulses produced by the counter. Both the amplitude
and the time distribution of the pulses can be analyzed. The
instrument consists of two main blocks, namely, a counter head and
a control and recording block. The counter head consists of a
plastic scintillator (polystyrene + p-terphenyl + POPOP), 10 cm in
diameter and 10 cm long. The end of the phosphor which is in
contact with the photomultiplier is conically shaped and the

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20703

S/120/61/000/001/041/062
E032/E114

An Instrument for the Recording of Neutrons Produced in a Toroidal
Pulsed Discharge

phosphor as a whole is surrounded by an MgO reflector.   The
ФЭУ-2А (FEU-2A) photomultiplier is used. The pulse from the
photomultiplier is fed into a preamplifier having an amplification
coefficient which can be adjusted between 1 and 10.   The
scintillation counter and the preamplifier are surrounded by a
two-layer screen (2 cm of copper + 2 cn of soft steel).   The
preamplifier is supplied by special batteries placed together with
the probe in an aluminium container having walls 2 cm thick.
Pulses from the preamplifier are fed into an amplifier and to one
of the channels of a pulse ОК -17М (OK-17M) oscillograph.   The
latter is triggered by a pulse from the thermonuclear apparatus.
Pulses can be photographed from the screen by camera attachment.
The amplified pulse is fed into a pulse shaping circuit followed
by a discriminator, a gating circuit and a scaler. The gate is
opened by a pulse from the thermonuclear machine. The instrument
is capable of recording pulsed neutron fluxes within a time range
of 10 µsec to 2 ms   with a delay relative to the trigger pulse
Card 2/3

20703

S/120/61/000/001/041/062
An Instrument for the E032/E114

up to 2 ms.   In order to determine the absolute neutron yield,
the instrument was calibrated on a linear deuteron accelerator,
using the   d(d,n) He^3 reaction and a standard Po-Be neutron
source.   Experiments showed that the instrument is capable of
recording both neutron fluxes in excess of 0.1 neutron/cm^2 per
pulse and also hard x-rays.   The efficiency of the instrument
for neutrons was found to be of the order of 0.5 with a
discrimination threshold of 0.5 MeV.
Acknowledgements are expressed to V.D. Timoshchuk,
L.N. Andreyev, N.A. Yavkinskiy and V.P. Berbasov for interest
and assistance.
There are 2 figures and 6 references: 2 Soviet and 4 non-Soviet.

SUBMITTED: December 10, 1959

Card 3/3

S/058/63/000/003/006/104
A160/A101

The main factors determining the dependence of the efficiency of scintillation thermal neutron detectors on their parameters are analyzed. In-
... into which γ-1 luminous compound (an alloy of boric
... grains with an average diameter of 1 mm were intro-
... a mixture polymethylmethacrylatic powder and methyl-
... thickness of the detector was 3, 5, 7 and 10 mm. The
... grains changed from 100 to 1,000 mg/cm3. The γ-back-
... roentgen/hour was discriminated to a level of 0.1 -
... the maximum efficiency of recording thermal neutrons was obtained at

Card 1/2

5/028 63/000/003/006/10
8160/101

A highly-sensitive scintillation...

...detector... of 3 mm and at a T-l concentration of 60 mg/cm3. The
detection efficiency was... %. Hereby, the detector was composed of a mixture
containing 51.9 g of the T-l luminous compound, 42 g of polymethylmethacrylate
powder, and 40 g of methylmethacrylate monomer. Since the duration of the
pulses caused by the γ-ray equalled 1 μsec, and the length of the pulses caused
by the neutrons equalled 2 - 3 μsec, it proved to be possible to somewhat in-
crease the sensitivity of the detector to the thermal neutrons by using the de-
layed-self-coincidence circuit.

K. Aglintsev

[Translator's note: Complete translation]

Card 2/2

37200
S/560/61/000/011/006/012
E032/E514

27.2400

AUTHORS: Matveyev, V.V. and Sokolov, A.D.

TITLE: Determination of induced radioactivity in the
             second cosmic spaceship

SOURCE: Akademiya nauk SSSR. Iskusstvennyye sputniki Zemli.
             no.11. Moscow, 1961. Rezul'taty nauchnykh
             issledovaniy, provedennykh vo vremya poletov vtorogo
             i tret'yego kosmicheskikh korabley-sputnikov, 42-43

TEXT: The authors determined the residual γ-activity in a
biological specimen of type $AMH-1$ (AMN-1) on board the second
Soviet cosmic spaceship.   The biological specimens were in the
form of cylinders (3.8 cm diameter, 4 cm long) with a total
weight of 86 g.   The activity of the specimens was measured
after return to Earth and it was found that if there was a
residual γ-activity 15 days after the return to Earth it did not
exceed 10^{-10} gram equivalents of radium.

SUBMITTED: May 3, 1961

Card 1/1

MATVEYEV, V.V.; SOKOLOV, A.D.

Determination of the natural amplitude resolution of photomulti-
pliers with the aid of a pulsed light source. Prib. i tekh. eksp.
6 no.1:75-77 Ja-F '61.   (MIRA 14:9)
                    (Photoelectric multipliers)

MATVEYEV, V.V.; SOKOLOV, A.D.

Instrument for recording neutrons in a toroidal pulse discharge.
Prib. i tekh. eksp. 6 no.1:130-132 Ja-F '61.   (MIRA 14:9)
                    (Nuclear counters)

S/089/61/011/005/01 /
B 02/B 04

AUTHOR: Matveyev, V.

TITLE: A conference on nuclear electronics

PERIODICAL: Atomnaya energiya, v. 11, no. 5, 1961, 467 - 468

TEXT: A conference on nuclear electronics organized by the IAEA was held
in May 1961 in Belgrade (Yugoslavia). More than 300 specialists from
26 countries and 4 international organizations participated. 150 lectures
were distributed over 10 sessions: scintillation and Cherenkov counters,
luminescence chambers, photomultipliers and electron-optical converters,
ionization detectors (gas and liquid), semiconductor detectors for nuclear
radiation, amplitude converters, multi-channel analyzers, automatic
evaluation of experimental data, classic electronics, quick-action
electronics, experimental diagrams, accelerators, and dosimeters. The
author gives a short and very general report of the conference. An ex-
position of laboratory equipment and devices was held during the con-
ference.

Card 1/1

MATVEYEV, V.V.; SOKOLOV, A.D.; URYADKO, S.I., red.; GREBNEVA, L.A.,
        tekhn. red.

[Photomultipliers in scintillation counters]Fotoumnozhiteli v
stsintilliatsionnykh schetchikakh. Moskva, Gosatomizdat,
1962. 155 p.   (MIRA 15:9)
        (Scintillation counters)   (Photoelectric multipliers)

S/120/62/000/001/035/061
E192/E382

AUTHORS: Matveyev, V.V., Minayeva, Ye.Ye. and Sokolov, A.D.

TITLE: Investigation of the temperature-dependence of the
          parameters of photomultipliers

PERIODICAL: Pribory i tekhnika eksperimenta, no. 1, 1962,
               144 - 148

TEXT: The operating-temperature range of scintillation
equipment is largely dependent on the thermal stability of
the parameters of photomultipliers used in the equipment. The
temperature stability of the photomultipliers was therefore
investigated, firstly by considering the available experimental
data and, secondly, by carrying out some special measurements.
The available data (for a number of American du Mont and RCA
tubes and Soviet devices) covered the temperature range from
-50 to +50 °C and were measured under pulsed conditions such
that the light spectrum covered the range from 3 500 to 6 000 Å.
It is found by examining these data that the temperature
coefficient of the photomultipliers, even of the same type,

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Investigation of ....

S/120/62/000/001/035/061
E192/E382

changes its sign; in most cases, the coefficient is negative
for wavelengths of less than 4 000 A but becomes positive
above 5 000 A. This seems to indicate that the photocathode
plays an important part in the thermal instability of photo-
multipliers. In order to clarify this problem, the temperature
characteristics of a number of Soviet photomultipliers was measured
by employing a suitable climatic-test chamber. The temperature
of the chamber could be varied from -50 to 100 °C. The photo-
cathodes of the tubes were illuminated by means of pulsed
sources based on a lamp, type ʺ --8 (MN-8), as described in
Ref. 12 (Matveyev and Sokolov - Apparatura dlya yadernoy
spektrometrii (Sb. nauchn. rabot) 1960, Atomizdat). The effect
of the spectral composition of the light was measured by using
a number of narrow-band (100 Å) light filters. It was found
that the highest temperature stability was obtained in photo-
multipliers, type ФЭУ-11 (FEU-11), which are provided with
dynodes made of an alloy and an Sb-Cs photocathode deposited
on a metal base. The effect of the photocathode was investigated

Card 2/3

S/120/62/000/001/035/061
E192/E382

Investigation of ....

by illuminating it with monochromatic light of the following wavelengths: 4 170; 4 630; 5160 and 6100 Å. It was found that in this case the overall sensitivity, as a function of temperature, varied not only in magnitude but also in sign. The equivalent noise of the photomultipliers was also measured and this is illustrated in Fig. 3, where its level in relative units is plotted for two photomultipliers (FEU-11 and FEU-24). The authors thank V.V. Khodakova and A.V. Koslyadin for help in this work.   There are 4 figures and 2 tables.

SUBMITTED: June 20, 1961

Fig. 3:
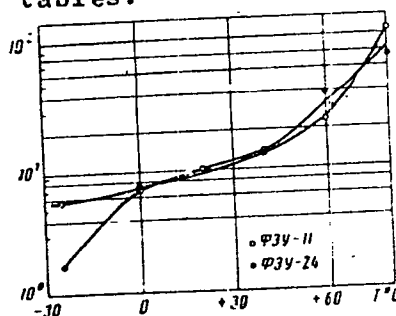
Card 3/3

MATVEYEV, V.V.; SOKOLOV, A.D.

Determining the induced radioactivity in the second spaceship.
Probl.kosm.biol. 1:265-266 '62.   (MIRA 15:12)
            (SPACE FLIGHT)   (RADIOACTIVITY)

L 15702-63   EWT(m)/BDS   AFFTC/ASD

ACCESSION NR: AP3004979   S/0120/63/000/004/0005/0018

AUTHOR: Baldin, S. A.; Matveyev, V. V.   53

TITLE: Gas scintillation counters (Review)

SOURCE: Pribory i tekhnika eksperimenta, no. 4, 1963, 5-18

TOPIC TAGS: counter, nuclear radiation counter, gas counter, scintillation
counter

ABSTRACT: A review is presented that generalizes the data on the development
and use of gas scintillation counters published in periodicals (mostly American)
from 1952 through 1962. Physical phenomena accompanying scintillation in gases
are considered. Structural components and schemes of gas counters are
described. The fundamental physical characteristics of the counters are given.
The more important applications listed are: alpha-particle detector, fission-
fragment detector, and neutron spectrometer. In the conclusion, the role of the
gas scintillation counter among other particle-detecting devices is indicated.

Card 1/2

S/0120/63/000/005/0049/0049

ACCESSION NR: AP3008667

AUTHOR: _____; Panova, T. P.; Roshchikhina, _____; Sokolov, A. D.

TITLE: Fast neutron spectrometry using scintillating lithium iodide single crystals

SOURCE: Pribory i tekhnika eksperimenta, no. 5, 1963, 49-50

TOPIC TAGS: fast neutron, single crystal, lithium iodide crystal, lithium iodide, fast neutron measurement, fast neutron spectrometry, scintillation crystal, decay time, light yield

ABSTRACT: The characteristics of a fast neutron spectrometer using lithium iodide crystals activated with europium and a method for measuring fast neutron spectra in the presence of an intense γ-background are described. The LiI(Eu) crystals were grown by the Stockbarger method at the Institut Kristallografii AN SSSR (Institute of Crystallography of the Academy of Sciences SSSR). The crystals were colorless and transparent. The measurements show that the light yield of the crystals in the region of 1630 Å is approx. 20-30% of that of standard NaI(Tl) crystals. The measured decay time of the crystals was approx. 1.4 μsec. In order to obtain measurements with minimum possible distortions, two crystals with identical decay time, differing significantly in sensitivity to fast neutrons

Card 1/2

L 16952-63

ACCESSION NR: AP3004887

put, equally sensitive to γ-radiation, were used. It was found that lithium io-
dide crystals made of reagents enriched with the Li⁶[Li⁶(Eu)] or Li⁷[Li⁷(Eu)]
isotopes are best suited for the purpose. Since no Li⁷(Eu) single crystals
were available to the authors, they used lithium iodide single crystals made of
a natural mixture of lithium isotopes. While this combination complicates the
method of processing the spectra, it also has certain advantages; crystals more
than 10 mm in diameter have approximately the same sensitivity to thermal and slow
neutrons, so that the distortions introduced by these particles into fast neutron
spectra can be discounted. Fast neutron spectra from a Po + Be source and from
a reactor were investigated. The results indicate that the method permits effec-
tive separation of neutron and γ-radiation. During measurement of fast neutron
spectra the integral load of the spectrometer must not exceed 10³ pulses/sec, and
care must be taken to shield the sensing elements from thermal neutrons. The
authors express their gratitude to A. I. Semakhov for preparation of reagents
used in growing the crystals." Orig. art. has: 5 figures.

ASSOCIATION: none

SUBMITTED: 31Mar63   DATE ACQ: 28Aug63   ENCL: 00

SUB CODE: NP, NS   NO REF SOV: 001   OTHER: 002

MATVEYEV, V.V.; MINAYEVA, Ye.Ye.; SOKOLOV, A.D.

Design of electromagnetic screens for photomultipliers. Prib. i tekh.
eksp. 8 no.2:116-120 Mr-Ap '63.   (MIRA 16:4)
                                   (Photoelectric multipliers)

L 12911-63   BDS/EWT(l)/ENG(k)/BS(w)-2   AFFTC/ASD/ESD-3/IFWL/SSD

ACCESSION NR: AP3001330   S/0057/63/033/006/0710/0714

AUTHOR: Matveyev, V. V.; Sokolov, A. D.; Suchkova, L. A.

TITLE: Investigation of hard radiations from plasma in a strong magnetic field

SOURCE: Zhurnal tekhnicheskoy fiziki, v. 33, no. 6, 1963, 710-714

TOPIC TAGS: Tokamak-2, high energy plasma, radiation from plasma

ABSTRACT: Measurement of the hard radiation method is considered to be a
desirable tool for the investigation of plasma behavior because it does not re-
quire the introduction of foreign objects into the discharge chamber. The x-rays
and neutrons emitted by the "Tokamak-2" apparatus were investigated in two series
of experiments beginning in 1959. Between the two series the apparatus was dis-
assembled and reassembled, but no important changes were intentionally made. The
results of the first series of experiments and a description of the experimental
techniques and apparatus have been published elsewhere (V.V. Matveyev and A.D. Soko-
lov, ZhTF 30, 10, 11/5, 1960). The measurements of the x-ray yield at right
angles to the electron trajectories made in the first series of experiments were
repeated and the following differences were noted: the point of maximum yield
shifted to somewhat lower values of the ratio of the electric field strength to
the pressure (E/p); the x-ray yield increased severalfold; the mean energy of the

Card 1/2

L 8624-65
ACCESSION NR: AP5001330

x-rays increased by 1.5-2 times; photons with energies up to 5 MeV were observed. The azimuthal distribution of the x-ray intensity was obtained for three different operating conditions, and the x-ray intensity was obtained as a function of E/p for both the electric field and the magnetic field in each of its two possible directions (four curves). The azimuthal distribution is not quite uniform and is not symmetric about the plane of symmetry of the equipment; the curves of yield versus E/p differ considerably from each other. These results are attributed to asymmetry of the field configuration. The x-ray yield was obtained as a function of E/p for four different plasmas consisting of hydrogen, deuterium, helium and argon. The mean energy of the x-rays decreased somewhat with increasing ion mass and is about 700 keV for argon. The shape of the yield curve for argon was considerably different from that for the other three plasmas, the maximum being multiple and shifted to higher values of E. Although the ion temperatures attained in the Tokomak-2 are not such as to lead one to expect neutron production in a deuterium plasma, a search was made for neutrons. None were found, and it is concluded that the neutron yield is less than 10 sup 4 neutrons/discharge when x-rays are absent and less than 10 sup 5 neutrons/discharge when x-rays are present. "In conclusion the authors convey their gratitude to G.G. Dolgov-Savel'yev, V.S. Mukhovatov, I.N. Golovin, V.I. Sedin and other co-workers for assistance and for participation in discussions of the experiments. The work was performed at the initiative and under the guidance of N.A. Yavlinskiy (deceased)." Orig. art. has: 1 formula and
Card 2/3

VARTANOV, Nikc ay Aleksandrovich; SAMCYLOV, Petr Semonovich;
    MATVEYEV, V.V., doktor tekhn. nauk, red.; KALYUZHNAYA,
    T.F., red.

    [Practical methods of scintillation gamma-spectrometry]
    Frakticheskie metody stsintilliatsionnoi gamma-
    spektrometrii. Moskva, Atomizdat, 1964. 274 p.
                                    (MIRA 17:11)

ACC NR,   AR6017157   SOURCE CODE: UR/0275/66/000/001/B034/B034

AUTHOR: Matveyev, V. V.; Sel'dyakov, Yu. P.

TITLE: Use of semiconductor detectors of nuclear radiation in standard equipment

SOURCE: Ref. zh. Elektronika i yeye primeneniye, Abs. 1B264

REF SOURCE: Tr. Soyuzn. n.-i. in-ta priborostr., vyp. 1, 1964, 14-22

TOPIC TAGS: radiation detector, radiat'on dosimetry, radiometry, nuclear radiation spectrometer, semiconductor device

ABSTRACT: The paper gives a brief description of the characteristics of semiconductor nuclear-radiation detectors. Their use in dosimetry, radiometry, and nuclear spectrometry is described. It is noted that a number of nuclear-radiation laboratories have been working on the development and large-scale application of various types of semiconductor nuclear-radiation detectors. L. S. [Translation of abstract] [RP]

SUB CODE: 18/   SUBM DATE: none

Card 1/1   UDC: 539.1.074:621.382

L 33184-66   EWT(1)   IJP'c)   AT

ACC NR: AR6016168

SOURCE CODE: UR/0058/65/000/011/0017/0017

AUTHORS: Baldin, S. A.; Matveyev, V. V.; Radyvanyuk, A. M.; Sokolov, A. D.

7/
B

TITLE: Development of apparatus for the investigation of high-temperature plasma by means of penetrating radiation

SOURCE: Ref. zh. Fizika, Abs. 11G133

REF SOURCE: Tr. Soyuzn. n.-i. in-ta priborostr., vyp. 1, 1964, 182-198

TOPIC TAGS: plasma diagnostics, high temperature plasma, x radiation, neutron radiation, plasma magnetic field, RADIATION COUNTER, RADIATION SPECTROMETER

ABSTRACT: The fundamental problems are considered in connection with the development of electronic-physics apparatus for the diagnostics of high-temperature current plasma by registration and spectrometry of the hard x-ray and neutron radiations. The requirements imposed on the apparatus and also the testing of the apparatus are investigated on the basis of the operating conditions of toroidal installations with strong magnetic field. [Translation of abstract]

SUB CODE: 20

Card 1/1 mc

L 6340-66   EWT(m)/EWP(l)/EWP(t)/EWP(b)   IJP(c)   JD

ACCESSION NR: AP5019881   UR/0181/65/007/008/2536/2538

AUTHOR: Britsyn, K. I.; Volkov, B. A.; Matveyev, V. V.; Smirnov, A. A.

TITLE: Effect of electric field on the position of the optical absorption edge in polycrystalline CdS layers

SOURCE: Fizika tverdogo tela, v. 7, no. 8, 1965, 2536-2538

TOPIC TAGS: cadmium sulfide, absorption edge, temperature dependence, electric field, forbidden band, polycrystal

ABSTRACT: The authors investigated the effect of the electric field and the dimensions of the crystallites on the position of the absorption edge in cadmium sulfide films obtained by vacuum evaporation. The apparatus used was similar to that employed by one of the authors earlier (Britsyn, with V. S. Vavilov, Opt. i spektr. v. 6, 861, 1960), except that the resolution and the sensitivity were increased. The results show that for films with crystal dimensions $a > 100$ Å the edge of the optical absorption is weakly pronounced, but when $a \sim 1$--3 μ, the absorption curve is similar to that for bulky single crystals, but is shifted in the long-range region. The temperature coefficient determined from this ratio $dE_g/dT \sim 10^{-7}$ ev/deg, agrees with data for single crystals. An ac field of 5×10^3 v/cm with frequency 16 cps shifted the absorption range in the region of $\lambda = 5100$ Å by an

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L 6340-66

ACCESSION NR: AP5019881

amount $\Delta\lambda = 15$ Å. An approximate expression is derived for the width of the forbidden band as a function of the applied electric field and of the crystallite dimensions. The calculated expression agrees well with the experimental data. The frequency shift of the absorption is also calculated and is found to agree with the experimental data. Orig. art. has: 4 formulas.

ASSOCIATION: none
SUBMITTED: 19Mar65   ENCL: 00   SUB CODE: SS, OP
NR REF SOV: 001   OTHER: 002

BW
Card 2/2

L 19125-65   EWG(m)/EWT(m)/EPF(m)/EPR/EWP(j)/EWP(b)   Pr-4/Pa-4/Pb-4   ESD(np)/
ESD(gs)/ESL(t)/AFW//ASD(a)-5/AFMD(t)/BAIM(a)/IJP(c)   JD

ACCESSION NR: AP5000688   S/0181/64/006/012/3730/3732

AUTHORS: Britsyn, K. I.; Matveyev, V. V.

TITLE: Effect of thermal oxidation of silicon on the position of
the absorption band due to oxygen atoms in 9.1 micron region

SOURCE: Fizika tverdogo tela, v. 6, no. 12, 1964, 3730-3732

TOPIC TAGS: silicon, silicon dioxide, oxygen, absorption band, ir
absorption, thin film, ir spectrometry

ABSTRACT: The effect of oxygen dissolved in silicon was determined
from the characteristic infrared absorption spectrum at wavelengths
near 9µ. The absorption spectra of the oxidized silicon were mea-
sured to determine the influence of the thickness of thermally grown
SiO_2 film on the position of the absorption band due to the vibra-
tions of the oxygen dissolved in the silicon. The samples were thin
p- and n-type silicon plates cut from ingots, with specific resis-

Card 1/2

L 16123-65

ACCESSION NR: AP5000698

tivity 7.5 ohm-cm. The silicon was oxidized at 900C in an oxygen atmosphere. The thickness of grown SiO_2 film ranged from 20 to 6000 Å. The absorption spectra were measured at room temperature with a double beam ir spectrometer having a resolution of approximately 3 cm^{-1} near 9 μ. The shift in the absorption band measured from the 1106 cm^{-1} level increased with increasing thickness of the silicon and decreased with increasing oxide film thickness. Its thickness variation indicates that it is due to a superposition of absorption in the $Si-O_2$ "vibrator" and in the SiO_2 film. It is concluded that an account of this shift leads to a greater accuracy in the determination of the concentration of oxygen atoms in silicon. Orig. art. has: 2 figures and 1 formula.

ASSOCIATION: None

SUBMITTED: 14Jul64   ENCL: 00

SUB CODE: SS, OP   NR REF SOV: 001   OTHER: 003

Card 2/2

L 22541-66   EWT(1)/T/EWA(h)   IJP(c)   GG/AT

ACC NR: AP6009648   SOURCE CODE: UR/0181/66/008/003/0717/0720

AUTHOR: Volkov, B. A.; Matveyev, Y. V.

ORG: none

TITLE: Spatial distribution of impurity centers in strongly doped semiconductors

SOURCE: Fizika tverdogo tela, v. 8, no. 3, 1966, 717-720

TOPIC TAGS: semiconductor impurity, spectral density, impurity band, impurity center

ABSTRACT: The purpose of the investigation was to assess the role of the inter-
action between impurity centers that may lead to spatial correlation between them,
and to determine the connection between the distribution of the impurity centers
in a semiconductor and the spectral density of the states in the impurity band.
The authors first determine the radial distribution function for an equilibrium
system of impurity centers in a semiconductor at a temperature when the impurity
is fully ionized and the number of impurities is smaller than the total number of
particles. The critical temperature in the correlation function is then determined
and defined as the minimum temperature at which equilibrium distribution of the im-
purity ceners can still be established in the lattice. The analysis shows that the

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L 22541-66

ACC NR: AP6009648

distribution of the impurity centers in the semiconductor depends little on the concrete method of introducing the impurity and that, in the presence of correlation, the state density in the details of the impurity band attenuates much more rapidly than in a perfectly random system. The authors thank L. V. Keldysh for a discussion of the work. Orig. art. has: 2 figures and 13 formulas.

SUB CODE: 20/   SUBM DATE: 16Jul65/   ORIG REF: 003/   OTH REF: 005

Card 2/2 BK

L 39689-66   EWA(h)/EWT(1)/T   ( )   AT/GD-2
ACC NR: AP6009649   SOURCE CODE: UR/0181/66/008/003/0721/0724

AUTHOR: Volkov, B. A.; Matveyev, V. V.

ORG: none

TITLE: Band shift in a strongly doped semiconductor under the influence of electrostatic fields of the impurity atoms

SOURCE: Fizika tverdogo tela, v. 8, no. 3, 1966, 721-724

TOPIC TAGS: semiconductor impurity, impurity band, impurity center, ionization phenomenon, activation energy, energy band structure, electrostatic field

ABSTRACT: The authors consider the influence of electrostatic fields of impurity centers on their ionization energy in the Hartree-Fock approximation. This is done by determining the dependence of the activation energy of a hydrogen-like impurity on its concentration through reducing it to the problem of finding in the eigenvalue spectrum of the Hamiltonian the point corresponding to the de-localization of the electron of an individual impurity center. This yields the dependence of the thermal activation energy of the impurity on its concentration in a non-compensated semiconductor. It is shown that the influence of the electrostatic field of the impurity atoms produces a shift of the proper bands of the semicon-

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L 39689-66

ACC NR: AP6009649   2

ductor, relative to vacuum, and that the shift is much larger than the drop in the
energy levels of the ground state of the impurities; this is accompanied by a
change in the thermal activation energy. The results are valid if the exchange
interaction is small and there is no degeneracy. The results are in good agree-
ment with experimental data published elsewhere (FTT v. 7, 9188, 1965). The
authors thank N. A. Penin for a useful discussion and L. V. Keldysh for reviewing
the manuscript and discussing the results. Orig. art. has: 11 formulas and 1
figure.

SUB CODE: 20/   SUBM DATE: 16Jul65/   ORIG REF: 003/   OTH REF: 006

Card 2/2

1 6-66   EWT(m)

ACC NR: AR6016488   SOURCE CODE: UR/0272/65/000/012/0103/0104

AUTHOR: Arsayev, M. I.; Matveyev, V. V.; Mysev, I. P.; Rudakova, G. M.;
Samoylov, P. S.; Sulimova, N. Ye.; Uskov, V. S.

ORG: none

TITLE: Development of scintillation and ionization methods in radiometry and
dosimetry

SOURCE: Ref. zh. Metrologiya i izmeritel'naya tekhnika, Abs. 12.32.899

REF SOURCE: Tr. Soyuzn. n.-i. in-ta priborostr., vyp. 1, 1964, 5-13

TOPIC TAGS: x ray radiation, low energy beta ray, scintillation counter,
radiation flux, soft bremsstrahlung, hard bremsstrahlung, bremsstrahlung

ABSTRACT: The major objectives of modern radiometry and dosimetry are
discussed. These include the quantitative and qualitative analysis of radiation
fluxes, the measurement of one type of radiation against the background of the
others, the dosimetry of the soft and of the hard bremsstrahlung of accelerators

UDC: 389.539.16

Card 1/2

L 45126-66

ACC NR: AR6016488

and of impulse radiation fluxes, and the radiometry of low-energy beta rays in liquids and in gases. It is noted that one of the main trends in the development of radiometry and dosimetry is that of methods of scintillation measurement, on the basis of which a whole series of instruments for industrial use has been produced. Nevertheless, the use of ionization methods is more rational for certain dosimetric and radiometric tasks. The article presents a brief review of some modern instruments and equipment used to solve practical problems in radiometry and dosimetry. [Translation of abstract]   [GC]

SUB CODE: 06, 18, 20/

Card 2/2

L 06173-67   EWT(d)/EWT(m)/EWP(v)/EWP(k)/EWP(h)/EWP(l)   IJP(c)

ACC NR: AP6032410

SOURCE CODE: UR/0089/66/021/003/0223/0224

AUTHOR: Matveyev, V. V.; Sel'dyakov, Yu. P.; Sokolov, A. D.

ORG: none

TITLE: The first domestic industrial apparatuses with semiconductor electron-hole detectors

SOURCE: Atomnaya energiya, v. 21, no. 3, 1966, 223-224

TOPIC TAGS: detection equipment, detection system, particle beam, nuclear physics apparatus, ELECTRON HOLE, SEMICONDUCTOR DEVICE, ALPHA PARTICLE DETECTOR, ALPHA SPECTRUM

ABSTRACT: The development of a system of detecting devices using semiconductors is reported. The system designated 9063-02 ("Amur 1") includes the following units: 1) The 6965-02 detecting unit designed for precise spectrometric measurements of α-particle flux for energies up to 5 Mev. The resolution of the unit is 1% and its size is 194 x 220 x 168 mm. 2) The 6965-01 all-purpose detecting unit which makes spectrometric measurements of α-particle flux with 1—3" resolution for energies of 5 Mev. Dimensions of the unit are 90 x 76 x 100 mm. 3) The 6465-01 detecting unit, which registers α-particles from open surfaces. Its resolution for α-particles with energies of 5 Mev is 13%. The unit can be used for determining the degree of contamination by α-radiating isotopes. It is 42 mm in diameter and 80 mm high. 4) The 6845-01 detecting unit which registers thermal neutrons with 0.1% efficiency; its diameter is 42 mm, and its height, 80 mm. 5) The 514-05 preamplifier which provides three

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L 06173-67

ACC NR: AP6032410

amplification ranges corresponding to energies of 0—10, 0—30, and 0—100 Mev. When the device operates at 0—10 Mev, the equivalent noise level does not exceed 10 kev and its sensitivity is 2 x 10^{12} /coul. 6) The amplifier blocks which includes a 514-03 amplifier, a 503-68 supply voltage indicator and BN-40 and BN-34 power supplies.

SUB CODE: 18,20 SUBM DATE: none

Card 2/2

ACC NR: AP7003305

SOURCE CODE: UR/0062/66/000/012/2235/2237

AUTHOR: Sokol, V. N.; Matveyev, V. V.; Vol'nov, I. I.

ORG: Institute of General and Inorganic Chemistry im. N. S. Kurnakov, Academy of Sciences, SSSR (Institut obshchey i neorganicheskoy khimii Akademii nauk SSSR)

TITLE: Determination of the density and refractive indices of cesium ozonide

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 12, 1966, 2235-2237

TOPIC TAGS: cesium compound, ozonide, refractive index

ABSTRACT: The refractive indices of cesium ozonide crystals were measured by an immersion method (described previously) in a stream of dry nitrogen at 0 to -10°C, using a goniometer in monochromatic light. The density was measured in the same temperature range by hydrostatic weighing. A special dosing apparatus was constructed for handling the microsamples of cesium ozonide, which is very sensitive to the action of moisture and carbon dioxide and is thermally unstable. Like sodium and potassium ozonides, cesium ozonide has the lowest density as compared to the peroxide and superoxide:

$$\begin{array}{cccc} & Cs_2O_3 & CsO_2 & CsO_3 \\ d_4^{20} & 4.47 & 3.80 & 3.19 \end{array}$$
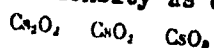
and has the highest density in the series of alkali metal ozonides:

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UDC: 531.75+535.32+546.214+546.36

ACC NR: AP7003305

	NaO_3	KO_3	CsO_3
d_4^{20}	1.6	1.99	3.19

Orig. art. has: 1 figure.

SUB CODE: 07/ SUBM DATE: 25May66/ ORIG REF: 007

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25 (1), 28 (1)

06177
SOV/115-59-11-5/36

AUTHORS: Matveyev, V.V., Ryaskov, V.L.

TITLE: The Selection of a Base for Measuring the Surface Ir-
             regularities of Ball Bearing Races

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 11, pp 18-20

ABSTRACT: The authors report on investigations of the surface ir-
             regularities of ball bearing races which were performed
             at the 1st GPZ. They explain briefly the development of
             devices for measuring the surface irregularities. The
             operational qualities of ball bearings depend to a con-
             siderable degree on the accuracy of the geometrical pa-
             rameters of the ball bearing components. However, it
             was established experimentally at the 1st GPZ that the
             surface irregularities will decrease the life of all
             bearings, if geometrical parameters, surface finish.
             etc are identical. For these surface irregularities.
             there are no standards and no definite methods of check-
             ing. When developing an "ondograph" (volnograf) for
Card 1/2   checking the surface irregularities, it is very impor-

The Selection of a Base for Measuring the Surface Irregularities of Ball Bearing Races

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SOV/115-59-11-5/36

tant to select the proper base. Measuring instruments of this type can be divided into two categories; a) instruments which are based on the surface to be controlled; and b) instruments based on a reference surface. G.S. Simkin and O.P. Fomina /Ref 1/ recommended a device for measuring the surface irregularities of ball bearing races. The authors mention the ENIIPP-KP-14 "ondograph" which is based on the center surface. A.N. Puzyr'kov, V.V. Matveyev and V.L. Ryaskov developed another "ondograph" which is based on the surface of a mandrel. The authors say that this device has an advantage over the aforementioned "ondograph"-types. It is shown in Fig 3. There are 6 diagrams, 2 graphs and 3 references, 2 of which are Soviet and 1 English.

Card 2/2

PHASE I BOOK EXPLOITATION   SOV/4398

Volume title: [illegible] Interchangeability and Engineering Measurements in Machinery Manufacture; University Collection, No. 2) Moscow, Mashgiz, 1960. 542 p. Errata slip inserted. 5,000 copies printed.

Ed.: A.I. Yakushev, Doctor of Technical Sciences, Professor; Editorial Council: A.I. Yakushev (Chairman); B.A. Tayts, Doctor of Technical Sciences, Professor; [illegible], Docent; N.I. Ganchev, Docent; P.N. Ozherman, Docent; and O. Ya. Ye. I. Volodin, Docent; [illegible] (Scientific Secretary); Engineer; Marklever; N. Ya. Yegorov, Doctor Yegor'yev (Scientific Secretary); Engineer; Markevor; N. Ya. Yegorov, Candidate of Technical Sciences, Professor; Ed.: B.A. Tayts; T.P. Korotkov, Candidate of Technical Sciences, Docent; L.M. Toronkov, Candidate of Technical Construction (Mashgiz); Managing Ed. for Literature on Machine and Instrument Construction (Mashgiz): O.F. Kochelova; Tech. Ed.: I.V. Pokrovskiy, Engineer; Ed. of Publishing House: O.F. Kochelova; Tech. Ed.: T.F. Sokolova.

PURPOSE: This collection of articles is intended for scientific and technical personnel dealing with problems of interchangeability and engineering measurements in the machine and instrument industries.

[illegible] in the machine and instrument industries.

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[illegible] A.V. [Engineer]. Use of Optical Interference of [Master] Forms in Measuring Systems .... [illegible]

[illegible] Y.Ya., and A.N. Chertorislin [Senior Instructor]. [illegible] Pallet in Methods of Feedback Dimensional Control

MATVEYEV, V.V., assistent

Temperature errors in instruments with a hydraulic transmission.
Vzaim.i tekh.izm v mashinostr.;mezhvuz.sbor. no.2:399-415 '60.
(MIRA 13:8)
(Measuring instruments--Testing)

S/122/60/000/006/002/012
A161/A026

AUTHOR: Matveyev, V. V., Engineer

TITLE: Selecting the Parameters for the Planetary 2K-H (2K-N)
               Reduction Gear with Two Internal Toothings

PERIODICAL: Vestnik mashinostroyeniya, 1960, No. 6, pp. 7-10

TEXT: Subject reduction gears are not free from deficiencies, but
they give high ratios at a minimum of gear couplings in different combi-
nations. Though much attention has been paid to them in technical litera-
ture, no practical recommendations have been made yet for the selection of
optimum parameters. Yuzhuralmashzavod (South Urals Machine Building Plant)
lately designed ten 2K-H (2K-N) type reduction gears with two internal
toothings and ratios between 96 and 960. Part of them are completed and
tested. A gas generator cup-drive shown in Fig. 2 is an example. The
article gives information on some results obtained by the plant's designers
in their investigations into the effect of different parameters on the
efficiency of the reduction gear. Two authors (Ref. 1, 2, 3) suggest a
different approach for determining the efficiency (Ref. 1 is a Soviet

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Selecting the Parameters for the Planetary 2K-H (2K-N) Reduction Gear with
Two Internal Toothings

collection of translations and reviews of foreign periodicals). Two formu-
las (1) and (2) from two works by V. N. Kudryavtsev (Ref. 2, 3) were used
for determining the effect of parameters on the volume of losses in mesh,
and three graphs (Figures 3, 4, 5) were plotted for the evaluation of the
effect by the tooth number difference z_2-z_1 (designated by c_2 in the graphs)
on the value of the part $\left(\dfrac{1}{z_1} - \dfrac{1}{z_2} + \dfrac{1}{z_3} - \dfrac{1}{z_4} \right)$ in the two Kudryavtsev formulas

(1) and (2), for the case of the pole within the mesh zone of one tooth
couple, and the case of the pole being outside. Formula (3) was used for
the determination of the ratio (i) at different c_2 values:

$$i = \frac{z_1^2 - z_1 c_3 + z_1 c_2}{c_2 c_3}, \quad \text{or} \quad i = \frac{z_1^2 + k z_1}{c_2^2 - k c_2} \qquad (3)$$

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Selecting the Parameters for the Planetary 2K-H (2K-N) Reduction Gear with Two Internal Toothings

where $c_2 = z_2 - z_1$; $c_3 = z_1 - z_3$; $k = c_2 - c_3 = (z_2 + z_3 - 2z_1)$ and the usual expression for the ratio in this case was

$$ i = \frac{1}{1 - \dfrac{z_2 z_3}{z_1 z_4}} $$

The formula (3) helps to find easily the value at a given ratio and z_1, and hence the tooth numbers for all pinions. The values of the losses in mesh (ψ_3) are also expressed (by a curve) in the same three graphs, as well as the friction losses in bearings ("ψ_{bear}"), which were calculated by the formula (4), where "f_{red}" is the reduced friction moment of roller bearings, assumed to be 0.002. The transmission efficiency was determined by formula (5):

$$ \eta_{trans} = \frac{1}{1 + \psi_3 + \psi_{bear}} $$

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Selecting the Parameters for the Planetary 2K-H (2K-N) Reduction Gear with Two Internal Toothings

S/122/60/000/006/002/012
A161/A026

[Abstracter's note: Subscripts bear (bearing), red (reduced) and trans (transmission) are translations of the original $nog\mu$ (podshipnik), np (privedennyy) and nep (peredacha).] The graphs show that the losses in mesh in a planetary reduction gear are increasing with the growing c_2, and Taplin's assumption that the efficiency may be raised by decreasing the difference between z_1 and z_2 is not confirmed. Several reduction gears had been tested for efficiency, and some test results are given in Table (page 9), including theoretical efficiency values calculated with the formulas (5), (4), and (2). The following conclusions are made: to determine the tooth number for "2K-N" reductors with two internal toothings and a maximum efficiency, the smallest tooth number difference possible must be taken ($c_2 = z_2 - z_1 = $ min) and the highest possible z_1 (limited by the permissible size and the necessary mechanical strength of the transmission); the "k" and the remaining tooth numbers in the transmission have to be found by the given ratio using formula (3). If necessary, the z_1 value can be corrected to obtain a more accurate ratio. Then the resulting transmission will be the optimum as to the losses. It is not expedient to

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Selecting the Parameters for the Planetary 2K-H (2K-N) Reduction Gear With Two Internal Toothings

S/122/60/000/006/002/012
A161/A026

reduce the c_2 value in the "2K-N" type transmissions impeding the generation angle. This will diminish the efficiency. Increasing ratio increases the share of losses in the bearings of the satellite pinion and of the eccentric shaft. The use of $z_2 - z_1 = z_4 - z_3$ is not good for the efficiency and may only be justified by the necessity of selecting a precise ratio. There are 5 figures and 3 Soviet references.

Card 5/5

MATVEYEV, V.V.; PUZYR'KOV, A.H.; RYASKOV, V.L.

Measuring the waviness of ring tracks of anitfriction bearings.
Izm.tekh. no.9:1-2 S '60.   (MIRA 13:9)
        (Bearings (Machinery)--Testing)

MATVEYEV, Vladimir Vasil'yevich; POSTERNYAK, Ye.F., inzh., red.; FREGER,
D.P., red. izd-va; BELOGUROVA, I.A., tekhn. red.

[Forced lubrication of gears] Prinuditel'naia smazka zubchatykh pe-
redach. Leningrad, 1961. 19 p. (Leningradskii Dom nauchno-tekhniche-
skoi propagandy. Obmen peredovym opytom. Seriia: Mekhanicheskaia ob-
rabotka metallov, no.15)   (MIRA 14:9)

                    (Gearing—Lubrication)